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TEODORO

# CHILE

..AT THE..

Pan-American Exposition

## Agriculture

As it is Conducted in Chile



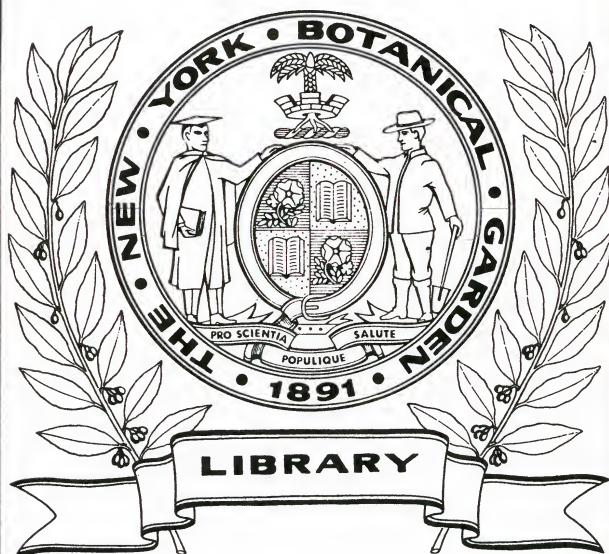
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1901



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CHILE  
AT THE  
PAN-AMERICAN EXPOSITION



AGRICULTURE  
AS IT IS CONDUCTED IN CHILE

By  
TEODORO SCHNEIDER



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# Agriculture as it is Conducted in Chile.

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## Distribution of the Territory from an Agricultural Viewpoint.

With regard to agriculture we may say that the territory of Chile is divided into three distinct districts, running from north to south. The first of these starts at Coquimbo; the second is situated between this province and that of Cautin, and the third runs from there down to the southern extremity of the country.

The agricultural production is not very abundant in the northern district, but, on the other hand, the products are excellent in quality, and are characteristic of the sub-tropic zone. Owing to lack of rain and to the small quantity of water in the rivers, only the lowlands are suited to cultivation. Agriculture in this region is entirely dependent on irrigation facilities; as a rule the soil is very fertile and extremely productive in parts where irrigation exists, although this portion of Chile is more famous as a mining center.

The second district is the most important in agricultural production, which is the predominating industry. Rains are more frequent in the southern part, and the greater quantity of water in the numerous rivers greatly facilitates irrigation in the Central Valley, situated between the Andes mountains and the coast range.

The soils of this district are exceptionally rich, particularly in the northern parts, while in the south they do not abound in lime and phosphoric acid. Among the most important products of this region are: cereals, farinaceous, textile, forage, bulb plants and others for industrial purposes, and in fact anything produced in the temperate zone.

The third, or southern district as it is called, is more suited for breeding cattle and its allied industries. The special advantages which its natural conditions offer will enable it to supply the entire country's demand for cattle and cattle products, as soon as it attains proper development.

The lands of this district comprise prairies and forests—the latter covered with a large variety of woods, some of which are excellent for building purposes, for cooperage, carpentering in general, and even for cabinet work. This section of the country may well be called the cattle and lumber region.

Agriculture in general is very extensive in Chile, owing to lack of population and sufficient capital for its proper development. In a few parts of the northern district, where property is somewhat distributed, land has a higher value and cultivation is more intensive.

The value of land property fluctuates between the two extremes; in the southern region and places where transportation difficulties are to be met with, it is as low as \$4.00 per hectare, while in the northern region, within short distance of large cities and railroad lines, it is worth as high as \$400 per hectare.

### The Climate of Chile from an Agricultural Viewpoint.

Owing to her geographical position, the extraordinary extension of her territory from north to south, and to her topographical conditions (as she is traversed by the Andes mountains and the coast line, and by numerous mountain ranges that run in a west-easterly course, which contribute to vary the exposure of the land), Chile has the peculiarity of possessing all climates imaginable, from hot to extreme cold.

The climate of the northern district is very hot and dry, and there is considerable difference between the temperature during the day and through the night, with little or no rain.

The climate of the central district is temperate and the seasons are well defined. The summers and part of spring and autumn are dry and bright, and the winters are rainy. The rainfall increases regularly from north to south, from 100 millimetres with 15 to 20 rainy days up to 150 millimetres with 120 rainy days.

The climate of the southern district is damp, and it rains from eight to nine months in the year. The rainfall is as follows: Valdivia 2.55 m., Puerto Montt 2.26 m., Ancud 1.32 m., Magallanes 0.49 m., which shows that rain decreases from Valdivia to the south. The weather is cloudy 200 days in the year and

the climate temperate, with the exception of the southern extremity, as in Valdivia for instance, where the maximum temperature is 77° Fahrenheit, and the lowest 28° Fahrenheit.

### Extent of Cultivation.

The superficial area devoted to cultivation is shown in the following table:

Wheat.....	1,000,000	hectares.
Barley.....	180,000	“
Corn and Beans.....	150,000	“
Potatoes.....	50,000	“
Lentils.....	3,000	“
Spanish Beans.....	2,000	“
Peas.....	20,000	“
Vineyards.....	100,000	“
Total.....	1,505,000	“

To this million and a half we must add about 600,000 hectares of land prepared for wheat from one year to the next, and 500,000 hectares of meadow lands.

On summing up these figures we obtain an aggregate of 2,600,000 hectares, which, when compared with the 10,000,000 hectares of tillable lands available in Chile, show that only one-fourth of her total area is utilized in agriculture, hence the splendid future which is reserved for this industry in Chile.

### The Future of Agriculture in Chile.

The following are the principal drawbacks in agriculture:

Lack or scarcity of transportation facilities on land, insufficiency of the railroads, especially those running west and east, which ought to terminate at good shipping ports; lack of steamship lines to facilitate exportation of produce; consequent high freight rates (the increase of the National Merchant Marine is in project to obviate this important difficulty); lack of sufficient population, and finally, the scarcity of capital, which tends to create high rates of interest on money invested in farming.

Among the industries that are capable of attaining great development in Chile, we can cite viticulture, fruit-growing, and cattle-raising, which is one of the most promising industries of the present time, as well as the production of sugar. Many millions of dollars worth of sugar are imported annually, and as the sugar beet can be grown with excellent results throughout the entire central region, it therefore offers a basis for a very vast business if its cultivation is conducted on a large scale. These observations are taken from the viewpoint of the present consumption of sugar in the country. Viticulture has already attained a state of great development in Chile, and by reason of the variety of climates and natural conditions, Chile produces all kinds of wines that are known in the market, from the heavy wines similar to Oporto and Jerez to light table wines which, to a large extent, are manufactured from the grape of French vines.

Fruit growing is equally promising in view of the marvellous facility with which fruit trees of the temperate zone grow, and even some of those of the torrid zone.

If the above facts are considered, the agricultural conditions of Chile are worthy of awakening the interest of capitalists who wish a sure and paying investment.

### **Agriculture as it is Taught in Chile.**

Agriculture has been taught in Chile for a long time past in special establishments for that purpose that were founded and are being supported by the Government.

Superior instruction in this branch is given in the Agricultural Institute on the grounds of the "Quinta Normal de Agricultura." This institution was founded in 1876, and in it the following courses are given: Agriculture, Zootechnics, Rural Engineering, Agricultural Botany, Agricultural Chemistry, Vegetable Pathology, Rural Legislation and Bookkeeping. Theoretic tuition is made complete by practical experiments throughout the different sections of the "Quinta Normal de Agricultura," principally in a veterinary hospital, vineyard and wine cellar, orchards and groves, crops, etc., and excursions are made from time to time by



the pupils to the most interesting factories and agricultural establishments, under the personal supervision of the professors of the Institute.

Annexed to this Institution are a Library, an Agricultura Museum and the Laboratory of the Agronomic Station where the pupils practice the analysis of soils, irrigating waters and of different agricultural products.

At regular periods the pupils are called to render examinations and those who pass satisfactorily are accorded the title of Agronom.

Those who have received the title of M. A. in mathematics prior to entering the Agricultural Institute are accorded the title of Agricultural Engineers on passing a final examination, in which they must present some original work of their own, treating, as a rule, on the monography of some important agricultural establishments.

Practical Schools of Agriculture for primary instruction are established in the following cities: Santiago, Chillan, Concepción and Ancud. There is also a special School of Viticulture in Cauquenes. The first and most important is on the grounds of the Quinta Normal de Agricultura. The tuition given in these schools is essentially practical and to this effect the pupils are obliged to work in the vineyards, wine-cellars, orchards, nurseries, apiaries, fields, etc., under the supervision of the professors of the school. The theoretic tuition given besides, is reduced more or less to simple explanations of the different works they have performed, and can be called practical demonstration. The object of these schools is to form expert workmen that can act as overseers in agricultural establishments.

To enter these Practical Schools of Agriculture it is necessary that the boys (whose age must be between 15 and 18 years) should have observed good conduct in the schools which they have attended and that they know how to read and write correctly, as well as to understand the four tables of arithmetic.

The pupils study for two years in these schools, after which they are given a certificate of competency.

## Monography of the Most Important Crops in Chile.

### WHEAT.

Wheat, the most important of the agricultural products of Chile, is the most largely exported.

It is grown on irrigated and non-irrigated lands, covering a large area from the Province of Coquimbo in the north to the Province of Osorno in the south. The most productive districts are the central provinces. In Coquimbo and the northern districts its cultivation is reduced to the narrow valleys that are watered by the rivers. From Los Vilos (32° south) it is sown on non-irrigated land in certain spots along the coast region, and increases as you travel southward. Wheat growing on non-irrigated mountainous lands starts at Los Andes. Irrigated lands for wheat growing occupy a large portion of the great Central Valley and of the transverse valleys watered by numerous rivers that run from the Cordillera and empty into the Pacific Ocean. South of Bio-bio all the crops are on non-irrigated lands.

The total area of land devoted to wheat growing in Chile per year can be estimated at one million hectares, although this could easily be two or three times greater.

The crop can be estimated at from eight to ten million hectolitres, with an average yield of from eight to ten hectolitres for each hectare of land. The production of wheat, however, has fallen off within the last few years, owing to numerous circumstances, among which unfavorable weather has had its effect and a certain quantity of this cereal has been imported during the current year to supply, in part, the home consumption.

The following are the classes of wheat that are most commonly raised in Chile: the long, round and black bearded "Candeal" wheats, cultivated in the northern district and part of the central non-irrigated districts; the soft grain wheat is characteristic of the central region, such as Oregon, American and Australian wheat, while in the south "Linseed," "Chino" and "Mocho" wheats predominate.

Several varieties of spring wheat have been introduced in the southern region, and promise to become very important, because

when sown in autumn an early harvest is possible, thereby avoiding the damages of the summer rains. Common wheat ripens in this district early in February.

On irrigated lands, wheat is sown in Chile after a crop of corn, beans, etc.; the unirrigated lands to be sown with this cereal are ploughed in the spring before the sowing.

Only of late years has machinery been employed in wheat-sowing and this to a limited extent. Seeders are used only in exceptional cases. Mowing is done chiefly by hand-sickles. The harvest season begins at the end of December in the north, and lasts to end of February in the south. Threshing machines of English and American manufacture are used.

Fertilizers for increasing the production have begun to be used to a certain extent within the last few years, giving preference to phosphated guano and nitrate of soda. Therefore it can be safely stated that the cultivation of wheat is only superficially done, and that much can be expected from this industry in Chile. In fact, it is said that in a few more years the country will produce from 25,000,000 to 30,000,000 hectolitres per year; that is to say, when the lands that are suited to its cultivation have all been devoted to that industry, and cultivation made extensive by the use of modern machinery and of the fertilizers which are so abundant throughout the country.

The quotations on April 1st, 1901, in the Santiago market were \$8.30 per 72 kilograms of white wheat and \$9.00 per 72 kilograms of "Candeal" (hard) wheat.

#### BARLEY.

Barley is cultivated in Chile more or less under the same circumstances as wheat, only on a smaller scale, and the lands where it grows are confined more to the central and northern districts. The Provinces of Aconcagua, Santiago and Colchagua are good producers of an excellent quality of barley, from which the first-class beer of the country is manufactured exclusively.

The total area devoted to the cultivation of barley in Chile can safely be estimated at 200,000 hectares, which yield more than one million and a half hectolitres; of this, 700,000 to 800,000



are consumed in breweries and for forage, from 300,000 to 400,000 hectolitres are used as seed and the surplus is exported to its principal market, England.

The classes that are most in demand for sowing purposes are the "Chevalier" and "Desnuda" for the best soils, while common barley is grown on inferior soils. The sowing season is in the spring months of September and October, and the good irrigated soils of the northern and central districts will allow of sowing as late as November and December.

Besides being grown as a grain, barley is also grown as a green forage, near the most important cities.

#### OATS.

The cultivation of oats is also important in the southern part of Chile, where the climate is more appropriate for that purpose. Oats are not grown in the northern and central districts, because there the summers are very dry and bright. Exports for the year 1900 amounted to more than 1,600 metric tons.

#### CORN.

Corn is not cultivated on a very large scale in Chile, and only the necessary quantity is produced to supply home consumption. Nevertheless, the natural conditions of the northern and central districts are very favorable for growing this cereal, and it is expected that the country will produce large quantities of corn when the system of cultivation which is now in practice has been modified. It is the small farmer who produces the greater part of the corn crop, sowing at the same time beans in the corn fields, and neither for sowing nor harvesting it are machines of any kind employed that would facilitate and cheapen production. North American manufacturers of special machinery for the cultivation of corn would find in Chile a very important market if they were to advertise the advantages of the same.

Corn is an important factor as a food of the masses, in either its green or ripe state, and there are many native dishes prepared chiefly from corn. The amount used as food in Chile can be estimated at 200,000 hectolitres, and an equal amount in

alcohol factories, while the corn used for feeding animals is about 100,000 hectolitres. The above shows that the aggregate amount produced in the country is half a million hectolitres.

#### BEANS.

The most important of farinaceous plants in Chile is the bean, because of the superior quality and quantity of the production. Its geographical distribution is similar to that of wheat. Although beans are not grown in the tranverse valleys of the northern part of the country on such a large scale as in other places, they occupy a large portion of the territory between the Aconcagua and Nuble rivers and farther south they are substituted with peas, lentils and "garbanzos."

The cultivation of beans has just been started on non-irrigated lowlands to the south of Aconcagua river, near the sea coast. Bean growing on non-irrigated land increases to the south, and extends also over the mountainous and lowlands of the central district.

Beans and corn are planted together in Chile and the land sown is called "Chacras." Odd pieces of land are rented out by the small farmer, or worked on shares with the ranch owner. It is also customary for the latter to cede a half "cuadra" of land for cultivating "Chacras" to the small farmer—these are called "Inquilinos."

Beans are planted throughout October and November in rows of from one-half to a yard apart, according to the development of the plant selected, and the work is entirely done by hand. Only fresh and good seed is used for planting purposes.

The care of these crops is confined to one or two rakings commonly done with hoes, and irrigating from time to time, taking care that the land is not flooded during the hottest hours of the day. The use of horse-rakes is gradually becoming popular, and when this method is generally adopted the production will be much more extensive, from the fact that beans grow more successfully in Chile perhaps than in any other country.

During bad seasons beans sometimes suffer from extreme weather, but these are exceptional cases. The late spring frosts are sometimes dangerous to early crops, while continued fogs

force the blossoms, and if followed by hot weather, they burn the leaves.

The early rains of March and April may cause the rotting of the pods. There are also seasons in which the plant suffers from "Blanco" and "Polvillo," when there are many consecutive cloudy days during the first stage of development.

Among the endless variety of beans known to exist in Chile, those chiefly sown are the following: Caballeros, Bayos Grandes, Bayos Chicos, Coscorrones, Canarios, Burritos, Mantecos, Trigos, Azufrados, Arvejillos, etc.

The crop is gathered between March and April and is threshed by either hand, horses, or machinery, according to the importance of the crop. The average yield on good soil is 30 hectolitres per hectare.

The total area sown annually with beans is about 15,000 hectares, which yield about one million and a half hectolitres. Nearly one million hectolitres of beans are consumed in the country alone, as this article and wheat are the principal food of the Chilean laborer throughout the north and central districts, while in the south beans are substituted with peas. The surplus of the production is exported.

The cultivation of beans, as it is conducted at present, requires too much manual labor, and as the population of the country is yet small, this industry has not yet attained the proper development.

There is every indication to believe that as soon as manual labor has been substituted by implements and machinery, the country will then produce from four to five millions hectolitres of beans per year.

The market price of this article on April 1st was from \$8.00 to \$12.00 (say \$2.75 to \$4.00 U. S. currency) per 100 kilograms (217 lbs.), according to class.

#### POTATOES.

The potato is the root plant most largely cultivated in Chile. It grows wild throughout the coast region, and the territory is nearly all suited for its cultivation.



The majority of potato planting is done in spring, and gathered in the latter part of summer, though in certain places on the coast and sheltered spots, where frost does not occur, it is planted in March, and gathered in spring to be sent to market before fully ripe. The south and central south districts are specially suited for growing potatoes, where they are planted on non-irrigated land with remarkable good results.

The native varieties of potatoes known in Chile are very numerous, and to these have been added the modern species from Europe within the last few years. Among the native varieties most worthy of mention are "Nanco, Carichagua, Coraila, Pana, Vallaroela, Bastonesa, Mantequilla, Notra, Quila, Camota, Chilena, De ojo morado, Indiana, Reina, Doma, Colorada, Blanca, Rosada, Chillota," etc. They differ from each other in shape (long or round); in being early or late growing; in being more or less productive, etc.

The work of preparing the soil and cultivating does not differ in Chile from that in any other country. Potato crops seldom suffer from late spring frosts, because they are sown late in the season in parts where such frosts occur.

The "*Macrosporimun Solani*" has infested this plant the past few years, but without causing great damage. No other diseases of this kind are known in Chile.

The crop is gathered between February and April. The best kind of soil produces 450 hectolitres per hectare. About 50,000 hectares of land are devoted each year to cultivation, and the crops amount to more than 4,000,000 hectolitres, most of which is consumed in the country, both as food for the people and animals, and for the manufacture of starch and alcohol. Only 40,000 hectolitres are exported annually to countries along the Pacific Coast.

The commercial value in the Santiago market on April 1st was \$2.80 (Chile currency) per hectolitre for the "Doma" class. As soon as transportation is made easy and cheap, 500,000 hectares of land can be devoted to the cultivation of potatoes in Chile that will yield from 30,000,000 to 40,000,000 hectolitres.

## FORAGE PLANTS.

Alfalfa is the most important of forage plants grown in the northern and central districts of Chile. Both the condition of the soil and the climate are well suited for its cultivation. In the northern region its vegetation period is about ten months, during which time some five or more cuts are made and used principally as hay for home consumption as well as for export. There have been years in which more than 7,000 metric tons of alfalfa hay were exported, and its excellent quality is appreciated in foreign markets. Summer rains being almost totally unknown in the central regions, and particularly so in the north, hay producing very rarely suffers from this cause and is thus made easy. There are several important establishments throughout this region with modern machinery in the interests of the hay industry, especially the Provinces of Aconcagua and Santiago.

In the southern part of Chile red clover gradually takes the place of alfalfa, as the climate becomes more damp and is utilized on a smaller scale for making hay. The cultivation of this plant has gained in importance within the past few years, as will be seen by the following figures representing the total amount of seed exported: in 1896 only 110 metric tons of this seed were exported, but from that time exports have increased considerably up to 964 metric tons for 1900. The seed is of very fine quality, and there are certain lands in Chile that yield as much as 1,500 kilograms per hectare. Red clover continues in vegetation throughout the winter in this region. This shows that the climate is very mild and suited to its cultivation. It is also used during this season for cattle grazing.

White clover grows very well throughout the central and southern regions, and to such an extent that it has become famous as a grass that will develop even in winter.

Among the forage plants belonging to the gramineous class which are most largely cultivated in Chile, we can cite *Lolium* (Ballica), "*Dactylus Glomerata*" and "*Holcus Lamatus*." There are two kinds of native gramineous plants of Chile, one is called "Mallin" and the other "Coiron," both of which grow abundantly in mountainous lands close to the Cordillera. The latter is better adapted for the southern districts, as in the north it becomes woody when it ripens.

## Bee Industry in Chile.

Few countries in the world possess more favorable conditions than Chile for the production of bee-honey and wax on a large scale. The climate is very mild throughout a large portion of her territory, and the extraordinary abundance of her flora, both wild and cultivated, permit of an endless number of bee-hives in any part of the country except in the northern region and southern extremity, the former on account of its barren soil, due to lack of rain, and the latter for the opposite reason.

Notwithstanding all these favorable conditions the bee industry has not yet attained a proper development, partly due to lack of interest on the part of farmers, but most particularly on account of the difficulty in securing competent persons who thoroughly understand the business. However, the production is rapidly and constantly increasing, according to the latest statistics. In 1893, for instance, the exports were 1,290 metric tons, which shows an increase of nearly 200 per cent. within a few years. The same can be said with regard to wax, exports of which were 157 and 285 metric tons for those same years, respectively.

Old fashioned bee-hives are common throughout the country, either horizontal or vertical, varying very little in size and shape; nevertheless, movable bee-hives are being established with excellent results where properly taken care of. It is not of rare occurrence to see a bee-hive produce as much as 40 kilograms of honey per year in well-selected spots. As a rule bee-hives are placed in open air without any protection whatever, because of the mild climate throughout a large portion of the bee zone.

The growth of the flora is only interrupted during two or three months in the year, so that the bees pass the winter easily, and it is exceptionally rare when they must be artificially fed. The flora throughout the bee zone is extremely varied and abundant, besides the meadows and extensive alfalfa and clover fields of the central and part of the northern districts furnish plentiful resources for the bees. These plains alternate with hills covered with brushes and trees, which offer enormous quantities of honey to the bees during certain seasons of the year.



Towards the southern portion of the country the thick forests and extensive plains can provide food for millions of bee-hives, so that it is safe to state that Chile has just begun to be engaged in this industry, and that there is a very extensive field there to develop this important branch of agriculture.

The market price of honey fluctuates between \$9.00 and \$12.00 (Chile currency) per 100 pounds, while that of wax is more or less from \$70.00 to \$80.00 per 100 pounds. Germany receives large quantities of this honey, say three-fourths of the total production. England comes next.

### **Fruit Trees in Chile.**

Almost any species of tree characteristic of the sub-tropic, temperate and cold zones, thrives well and rapidly in Chile. The climate is so favorable that those which shed their leaves are without foliage during only three months of the year. Another advantage for the planter is that a large portion of the lowlands are well irrigated, and this greatly facilitates the growing of fruit trees. To corroborate this statement it suffices to point out the large fields in the southern district that are covered with wild apple trees. This tree grows wild there owing to the favorable natural conditions of the country, this being perhaps the only place in the entire world where apples grow wild.

Peaches, plums, pears, apples, figs, oranges, lemons, cherries, etc., produced in Chile are of an excellent quality, although the trees receive but very little attention aside from an occasional irrigation during the dry season.

The rapid development of fruit trees in Chile is really remarkable, and it is not of rare occurrence to see peach trees beginning to bear fruit from the third year, and by the time they are five or six years old they have attained considerable development. The vegetation is so vigorous that the trees are not seriously affected by certain diseases as would be the case in other countries under the same conditions, and where the affected trees finally die within a short time.

On the other hand, the fruit-drying industry in Chile is favored to a great extent by the hot and dry summers of the north and

central regions. Rains are very rare from December to March in this part of the country. It is in this district where the cultivation of fruit for drying or preserving has become of importance, and a number of factories have been started for this purpose. It can be safely stated that the fruit production can be increased a hundred-fold if advantage is taken of the natural conditions which are favorable to this industry.

The most notable dry-fruit centers of the country are Elqui, Huasco, Paihuano, Vallenar, etc. They are chiefly devoted to preparing raisins from the "Moscatel de Alejandria" grape, dried figs and peaches.

In the south preference is given to drying cherries and plums.

Exports of dry and fresh fruit for 1900 amounted to a little over \$221,000 (Chile currency), not including exports of preserved fruits. The most important establishments for preserving fruits are situated in the Provinces of Aconcagua, Santiago and O'Higgins.

There are several large nurseries in the country, the principal one being "Santa Ines," which belongs to Señor Salvador Izquierdo Sanfuentes, situated at Nos, in Santiago Province. Both in magnitude and varieties of trees cultivated this nursery ranks with the largest in Europe. Señor Benjamin Matte's establishment at Guindos, in the same province, and Señor Manuel Bunker's "El Vergel" at Angol, are also important ones.

With the object of encouraging the creation of plantations and particularly of fruit trees, the Government of Chile has recently established nurseries in different parts of the country where agriculturists may find any species of tree they desire to cultivate, at reasonable prices.

### Horticulture.

Chile possesses special advantages for raising any kind of vegetable with comparatively little labor and excellent results. The productiveness of her soil, her mild climate and irrigation facilities are favorable conditions for horticulture. Exports of fresh, dried and preserved vegetables are increasing rapidly.

Canning factories make a specialty of asparagus, tomatoes, peppers, etc. Naturally the cultivation of vegetables is more important in places situated within short distance of large cities where producers make quicker sales. The amount of land devoted to horticulture in Chile can be estimated at 100,000 hectares.

### Cattle Raising in Chile.

Cattle raising and its allied industries are at present in a very prosperous condition in Chile.

Aside from being a safe investment for capital, agriculturists who devote themselves to this industry find a paying business. Prices have risen considerably of late, which makes this industry even more promising, and it is believed that conditions will be the same for some time to come, from the fact that the country's consumption alone insures a good market.

Chile possesses an extensive southern region especially suited for breeding cattle and sheep, where the price of land is very cheap. At public auctions land can be procured for \$4.00 per hectare, and sometimes even for less; climatic conditions are most favorable, as abundant rains maintain the meadows in good shape and facilitate the making of artificial pastures. Red and white clover as well as alfalfa grow abundantly throughout the central and northern region.

In the southern extremity of the country conditions are more favorable for sheep raising, as can be seen by the increase in wool exports, from 2,500 metric tons in 1891 to 4,500 tons in 1896. Exports have since maintained these figures.

The total number of animals at present can be estimated at 1,500,000 cattle, 600,000 horses, 1,800,000 sheep and 800,000 hogs.

Most of the cattle are composed of cross-breeds from the imported Durham and the Iberic breed, which were brought to the country by the Spaniards after the Conquest.

The Durham breed has become favorably acclimated, and there are now several breeding farms of pure blooded Durhams, among



which are La Peña and Ucuquer, belonging to Señora Juana Ross V. de Edwards. A few of the Ayr, Jersey, Swiss and Dutch breeds have also been imported. The southern region seems to suit these better.

Cattle are raised in Chile in the open all the year round, divided off by stone, mud, or barb wire, and in the south by wooden posts. The large cattle ranches have for winter sheltering enclosures, or better, extensive tracts of land at the foot of the Cordillera range, protected from winter storms by hills and woods and at the same time extensive fields, well provided with running water and green grass for the cattle during dry seasons. The allied industries of this branch are carried on throughout the central zone, particularly in irrigated districts where large quantities of cheese and butter are manufactured. Pure milk is also extensively sold.

The cheese manufactured in the country is called "Chanco." It belongs to the soft class. Much of it is consumed in the country. Besides this many other European brands are manufactured in Chile, especially what is called English cheese. On most farms centrifugal machines and modern apparatus are used for the manufacture of butter. Some 50 to 60 metric tons of butter are exported annually as surplus of the country's consumption. Cheese sells from 25 to 30 cents per pound, butter from 70 to 80 cents per pound (Chile currency), and pure milk from 5 to 20 cents per litre, according to seasons and location.

The price of a one-year-old Durham cross-breed calf is from \$50.00 to \$55.00 (Chile currency), when in a fairly good condition; for a two-year-old the price is \$65.00, while a three-year-old weighing about 350 kilograms commands as high as \$75.00 to \$80.00. These prices insure a profit of 40 to 50 per cent. on money invested in this industry, and they will without doubt keep steady for a number of years, as production is scarcely sufficient for home consumption.

Cattle raising has been protected by duties levied on cattle imported from the Argentine Republic, and for that reason this industry is receiving great impulse. In January last this duty

reached its limit, which is \$16.00 per head (Chile currency), excepting those under one year old, which are free of duty. Chile's imports of cattle reached 140,000 head in 1897, but two years later these figures had fallen to 40,000.

The hide and sole leather trade is very important in Chile. The latter is justly considered to be of the best quality, especially that manufactured in the southern provinces of Valdivia and Llanquihue. The annual exports of sole leather are from 2,500 to 3,000 metric tons, while those of rough hides were 1,345,000 for 1898 and 2,104,000 for 1899.

TEODORO SCHNEIDER,  
Delegate for Chile, Chief of Agriculture.



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